

AD-A141 037

THE CHARACTERISTICS OF GENERATION AND THE RATE OF
DISTRIBUTION FOR SCIENC. (U) FOREIGN TECHNOLOGY DIV
WRIGHT-PATTERSON AFB OH Y GUOJIN 01 MAY 84

1/1

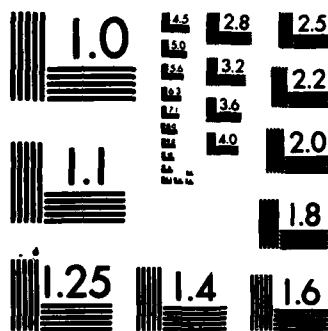
UNCLASSIFIED

FTD-ID(RS)T-0436-84

F/G 5/2

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

2

FTD-ID(RS)T-0436-84

AD-A141 037

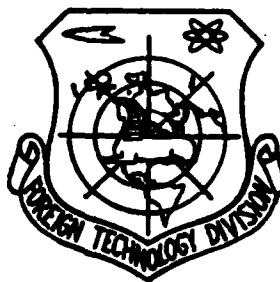
FOREIGN TECHNOLOGY DIVISION



THE CHARACTERISTICS OF GENERATION AND THE RATE OF
DISTRIBUTION FOR SCIENCE AND TECHNOLOGY INFORMATION
IN OUR COUNTRY (CHINA)

by

Yin Guojin



DTIC
ELECTE
MAY 15 1984

S B D

DTIC FILE COPY

Approved for public release;
distribution unlimited.

EDITED TRANSLATION

FTD-ID(RS)T-0436-84

1 May 1984

MICROFICHE NR: FTD-84-C-000449

THE CHARACTERISTICS OF GENERATION AND THE RATE OF
DISTRIBUTION FOR SCIENCE AND TECHNOLOGY INFORMATION
IN OUR COUNTRY (CHINA)

By: Yin Guojin

English pages: 9

Source: Qingbao Kexue, Vol. 4, Nr. 1, February 1983, pp.
22-26

Country of origin: China

Translated by: LEO KANNER ASSOCIATES
F33657-81-D-0264

Requester: FTD/TQTM

Approved for public release; distribution unlimited.

THIS TRANSLATION IS A RENDITION OF THE ORIGINAL FOREIGN TEXT WITHOUT ANY ANALYTICAL OR EDITORIAL COMMENT. STATEMENTS OR THEORIES ADVOCATED OR IMPLIED ARE THOSE OF THE SOURCE AND DO NOT NECESSARILY REFLECT THE POSITION OR OPINION OF THE FOREIGN TECHNOLOGY DIVISION.

PREPARED BY:

TRANSLATION DIVISION
FOREIGN TECHNOLOGY DIVISION
WP.AFB, OHIO.

GRAPHICS DISCLAIMER

All figures, graphics, tables, equations, etc. merged into this translation were extracted from the best quality copy available.

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	



THE CHARACTERISTICS OF GENERATION AND THE RATE OF DISTRIBUTION FOR SCIENCE AND TECHNOLOGY INFORMATION IN OUR COUNTRY [CHINA]

Yin Guojin

Central South Mining and Metallurgy College

There are plentiful science and technology papers in China, and the volume of papers increases day by day with the development of science and technology. The exploration and discussion of generation characteristics and rules of science and technology information in China, as well as the correct approach of seeking and collecting domestic science and technology information are a significant work in faster dissemination of the domestic (within China) achievements of science and technology. In order to enhance the study of formation characteristics and rules of domestic information on science and technology, the author conducted an investigation and statistical study (with assistance from the related departments) on more than 470,000 manuscripts mainly published in recent years in 3092 publications, as well as internal-information-only documents, thus exploring the distribution characteristics and rules of various disciplines of information. The author has a preliminary quantitative comprehension of the distribution situation of science and technology information in China.

I. Distribution Situation of Science and Technology Information in China

The manuscript materials investigated and studied in this report include the eight following specialties or courses of study: (1) Summary of natural science, and elementary disciplines of natural science, including mathematics,

physics and mechanics, in all 54,614 papers; (2) Chemistry and chemical engineering manuscripts (24,654 papers), including general chemistry, inorganic chemistry, organic chemistry, physical chemistry, analytical chemistry and chemical engineering; (3) 62,842 papers dealing with various aspects of geology; (4) 70,292 papers on mechanical engineering and machine building; (5) 53,069 papers on electrical engineering, electronics and electronic computers, including elementary electrical engineering, electronics, electric equipment, automated and electric instruments (and meters), and hardware and software of electronic computers; (6) 36,745 papers on mine engineering, including prospecting engineering, extraction engineering, ore dressing, and mining machinery; (7) 78,118 papers in the metallurgy engineering category, including metallurgy theory, metallurgy techniques of iron, steel and nonferrous metals, physical metallurgy, metal-material engineering, metal corrosion and protection, metallurgy and processing, heat treatment equipment, and metallurgy instruments and meters; and (8) 96,743 papers on industrial construction, transportation, communications, environmental science, industrial economy, management engineering, and technical education. Of the eight aforementioned categories, there are altogether some 470,000 papers. In terms of characteristics, these manuscripts are mainly original (primary) manuscripts and tertiary manuscripts, including academic papers, research reports, technical summaries, analyses of special topics, general descriptions, and information, among others. However, none of the manuscripts are abstracts (of papers), indexes, catalogs of products and retrieval reference publications, nor advertisement literature.

There are four categories of statistics classified by sources and publication units; i.e., scientific research and design departments, higher schools, science and technology information, academic associations, information networks, editing and publishing units, factory and mining enterprises.

In the investigation and statistics, analysis is conducted of more than 470,000 papers, classified by the four aforementioned categories. There are 230,285 papers (48.26 percent of the statistical volume) originating from scientific research and design units; i.e., scientific research and/or design academies and institutes under ministries and commissions in the government, as well as locally administered scientific research and/or design units. These

are major producing bases of science and technology manuscripts in China, and are an important source of information. Next in sequence of volume are science and technology information units, various levels of information networks, editing and publishing units of academic associations and science and technology information units. The volume of manuscripts originating from these units (briefly called the information publishing source) is 24.03 percent of the total volume of the investigation and statistics. The volume of documents from higher schools (including a small number of secondary professional schools) is 13.14 percent. The volume of manuscripts from factory and mining enterprises is 14.57 percent. Refer to Table 1.

Table 1. Source statistics of domestic [within China] manuscript materials

项 (a) 目	(b) 科研设计	(c) 高等学校	(d) 情报出版	(e) 矿山工厂	(f) 合 计	
文献源部门 (g)	数量(篇) (h)	997	222	202	1309	2730
	%	36.52	8.13	7.40	47.95	100.00
刊物数量 (种) (i)		1,313	327	782	670	3092
文献数量 (j)	篇 (k)	230,285	62,651	114,626	69,515	477,077
	%	48.26	13.14	24.03	14.57	100.00

Key: (a) Item; (b) Scientific research and design; (c) Higher schools; (d) Information publications; (e) Mines and factories; (f) Total; (g) Units of manuscript source; (h) Number (of papers); (i) Number of journals (by title); (j) Manuscript volume; (k) Number of titles.

II. Distribution of Information Sources (Within China) of Various Specialties of Science and Technology

In manuscript distribution of various specialties of science and technology, the generation characteristics are not entirely identical, but units of scientific research and design are still the major primary source of information;

among the eight specialties in the statistics, the percentages of these units are 32.37 to 47.05. 14.82 to 49.97 percent of the papers originated from editing and publishing units of information and academic associations; papers originating from higher schools are 36.30 percent of the elementary disciplines; the percentages of the other seven specialties are 7.15 to 13.07. Of the volume of manuscripts originating from factory and mining enterprises (with the exception of a very low volume for elementary disciplines), relatively high proportions (27.85 to 31.00 percent) are for metallurgy engineering, mechanical engineering, electronics, electronic computers, and mine engineering. In geology, statistics on geology prospecting teams are included with those of factory and mining enterprises; therefore, the percentage of this division is higher, 32.02 percent (refer to Table 2).

For the fundamental courses of natural science, major manuscripts originate in scientific research and design units and higher schools; both sources are 90.39 percent of this category of manuscripts. For chemistry and chemical engineering, the lion's share of papers is concentrated in scientific research as well as design and information publishing units, occupying 83.97 percent of the total volume. For the five specialties of mechanical engineering, electronics and electronic computers, geology, mine engineering and metallurgical engineering, the highest manuscript volumes originate from scientific research and design units, and factory and mining enterprises; the two categories occupy 64.30 to 78.50 percent of the total manuscripts of their respective specialty.

After manuscript statistics were collected of eight categories of specialty from 29 provinces, municipalities and autonomous regions throughout China, calculations are conducted on the first six provinces and municipalities with the highest manuscript volume of each specialty; generally each occupies more than one half of the manuscripts of such a specialty. Mastering the distribution characteristics of these manuscript originating units and regions can provide a basis for discussing and collecting domestic manuscripts.

Table 2. Distribution statistics of information sources of various specialties of science and technology in China

学(a)科	情报(b)源	科研设计(c)	情报出版(d)	高等学校(e)	厂矿企业(f)	合(g)计
自然科学(h) 基础学科	篇(p)	25,545	9,246	19,823		54,614
	%	46.77	16.93	36.30		100.00
化学与(i) 化学工程	篇(p)	11,354	9,347	2,031	1,922	24,654
	%	46.05	37.91	8.24	7.80	100.00
机械工程(j)	篇(p)	30,191	10,420	9,279	20,402	70,292
	%	42.95	14.82	13.21	29.02	100.00
电子学与(k) 电子计算机	篇(p)	18,711	13,322	6,626	15,410	53,069
	%	34.90	24.85	12.36	27.89	100.00
地质科学(l)	篇(p)	23,718	14,512	4,491	20,121	62,842
	%	37.74	23.09	7.15	32.02	100.00
矿业工程(m)	篇(p)	15,410	8,101	3,001	10,233	36,745
	%	41.94	22.04	8.16	27.85	100.00
冶金工程(n)	篇(p)	37,105	13,677	3,115	24,221	78,118
	%	47.05	17.51	3.99	31.00	100.00
其他专业(o)	篇(p)	31,311	48,343	12,641	4,448	96,743
	%	32.37	49.97	13.07	4.59	100.00

[Key on following page]

Key [of table 2 on preceding page]: (a) Course of study; (b) Source of information; (c) Scientific research and design units; (d) Information publishing units; (e) Higher schools; (f) Factory and mining enterprises; (g) Total; (h) Elementary discipline of natural science; (i) Chemistry and chemical engineering; (j) Mechanical engineering; (k) Electronics and electronic computers; (l) Geology; (m) Mine engineering; (n) Metallurgical engineering; (o) Other specialties; (p) Number of papers.

III. Distribution Rate of Domestic (Within China) Information on Science and Technology

The manuscript generation characteristics of science and technology information in China are concentrated in scientific research and design units, information publishing units or scientific research and design units, as well as factory and mining enterprises; in regions, these manuscripts are concentrated in few provinces and municipalities. By using the aforementioned characteristics, we can go a step further to discuss and study the quantitative relationship of distribution of science and technology information in China, thus providing a quantitative concept of mastering the generation rule of science and technology information in China.

If the categorization of generation units of science and technology information (four categories are used for the time being) is considered by combining the quantitative ratio (A) and the regional distribution ratio (B) of the information source, then the product of the two ($A \times B$) can be considered as the ratio (C) occupied by some major regions in China (such as the six provinces and municipalities with the highest manuscript generation volume) of manuscripts in a certain specialty and the two major category units. C is considered the distribution rate, which can quantitatively indicate the concentration situation of various specialties of science and technology manuscripts in China. In other words, the collection of manuscript materials of a specialty in these regions and/or units can basically indicate the proportions of all manuscripts of this specialty. Thus, the information collecting personnel as well as science and technology personnel can understand the manuscript generation characteristics and the collected ratio of the information materials.

Of course, the aforementioned calculation method deals only with the quantitative consideration, not the factors of quality and representation of

manuscripts. However, if only with appropriate statistics of the first two columns, this can basically indicate major generation regions and units (of the distribution characteristics) of science and technology manuscripts in China.

From the calculation results in Table 3, it is found that generally the manuscript distribution rate is about 50 percent for the six provinces (and municipalities) with the highest volume of science and technology manuscripts and the relatively concentrated two (categories of) units for the highest volume of domestic manuscripts of various specialties. For the elementary disciplines in natural science, generally the distribution rate is as high as 68.16 percent in scientific research and design units and higher schools in six provinces and municipalities (Beijing, Shanghai, Hubei, Sichuan, Shaanxi and Jiangsu). In other words, more than two thirds of this category of manuscripts in China is concentrated in two categories of units in six provinces and municipalities. Similarly, for chemistry and chemical engineering manuscripts, the distribution is 56.36 percent of the scientific research and design units, and information publishing units in the six provinces and municipalities with the highest volume (of manuscripts); this is more than one half (in volume) of the nation as a whole. The distribution of mechanical engineering papers in two categories of units (in six provinces and municipalities) is 44.11 percent. The corresponding rate is 49.86 percent for electronics and electronic computers; 40.24 percent for geology; 52.29 percent for mine engineering; 53.96 percent for metallurgical engineering; and 51.02 percent for other specialties. In other words, more than one half of the manuscripts are concentrated in information editing and publishing units as well as scientific research and design units in six provinces and municipalities (Beijing, Hubei, Liaoning, Shanghai, Sichuan and Hebei).

By using the aforementioned methods, the use of investigation and statistical materials can also quantitatively indicate the distribution rate of information of each major information source. For example, the distribution rates of manuscript volumes originating in the Beijing area are shown in Table 4.

Table 3. Statistics of major distribution rates of science and technology information in China

专 (a) 业	全国总文献量 (b) (篇)	(c) 文献量最多的前 6 个省市		(d) 主要产生部门		(e) 分布率 (A × B) (C)	
		地 (f) 区	文献量 (g) (h) (A)	占全国 %	部 (i) 门 (j) (k) (B)	文献量 (l) (m) (B)	占全国 % (n) (C)
自然科学 (j) 基础学科	54,614	(v) 北京、上海 (w) (x) 湖北、四川 (y) 41,187 (z) 陕西、江苏 (A)	41,187	75.41	(r) 科研设计 (s) 高等学校	49,368	90.39 68.16
化学与 (k) 化学工程	24,654	(v) 北京、上海 (w) (B) 天津、湖南 (C) 16,556 (A) 江苏、陕西 (z)	16,556	67.12	(r) 科研设计 (t) 情报出版	20,701	83.97 56.36
机械工程 (l)	70,292	(v) 北京、上海 (w) (D) 辽宁、江苏 (A) 43,080 (z) 陕西、河南 (E)	43,080	61.28	(r) 科研设计 (u) 厂矿企业	50,593	71.98 44.11
电子学与 (m) 电子计算机	53,096	(v) 北京、上海 (w) (A) 江苏、四川 (y) 41,150 (D) 辽宁、陕西 (z)	41,150	77.54	(r) 科研设计 (u) 厂矿企业	34,121	64.30 49.86
地质科学 (n)	62,842	(v) 北京、河北 (F) (G) 山东、湖北 (x) 36,254 (H) 云南、陕西 (z)	36,254	57.69	(r) 科研设计 (u) 厂矿企业	43,839	69.76 40.24
矿业工程 (o)	36,745	(v) 北京、辽宁 (D) (C) 湖南、江苏 (A) 27,530 (G) 山东、江西 (I)	27,530	74.92	(r) 科研设计 (u) 厂矿企业	25,643	69.79 52.29
冶金工程 (p)	78,118	(v) 北京、辽宁 (D) (x) 湖北、湖南 (C) 53,696 (y) 四川、内蒙古 (J)	53,696	68.24	(r) 科研设计 (u) 厂矿企业	61,326	78.50 53.96
其 他 (q)	90,743	(v) 北京、湖北 (x) (D) 辽宁、上海 (w) 59,936 (y) 四川、河北 (F)	59,936	61.35	(t) 情报出版 (r) 科研设计	79,654	82.36 51.02

[Key on following page]

Key [of Table 3 on preceding page]: (a) Specialty; (b) Total number of manuscripts (papers) in China; (c) The six provinces and municipalities with the highest volume of manuscripts; (d) Major generation units; (e) Distribution rate; (f) Region; (g) Manuscript volume; (h) Percentage out of the whole nation; (i) Unit; (j) Elementary natural science; (k) Chemistry and chemical engineering; (l) Mechanical engineering; (m) Electronics and electronic computers; (n) Geology; (o) Mine engineering; (p) Metallurgical engineering; (q) Others; (r) Scientific research and design units; (s) Higher schools; (t) Information publishing units; (u) Factory and mining enterprises; (v) Beijing; (w) Shanghai; (x) Hubei; (y) Sichuan; (z) Shaanxi; (A) Jiangsu; (B) Tianjin; (C) Hunan; (D) Liaoning; (E) Henan; (F) Hebei; (G) Shandong; (H) Yunnan; (I) Jiangxi; (J) Nei Mongol.

Table 4. Statistics of manuscript distribution rates of each specialty in Beijing Municipality area.

(a) 专 业	(b) 全国调查 统计量 (篇)	北(c) 京		(d) 文献产生部门			(e) 分布率 (A × B) (C)
		文献量 (f)(篇)	占全国% (g)(A)	部(h)门	文献量 (f)(篇)	占本地区% (i)(B)	
自然科学基础学科 (j)	54,614	19,760	35.18	(r)科研设计 (s)高等学校	14,750	74.65	25.51
化学与化学工程(k)	24,654	6,840	27.24	(t)科研设计 (u)情报出版	4,791	70.04	19.43
机械工程 (l)	70,292	13,860	19.72	ditto	9,394	67.78	13.37
电子学与电子计算机 (m)	53,069	19,001	35.80	ditto	13,890	73.10	26.17
地质科学 (n)	62,842	18,750	29.84	ditto	14,325	76.40	22.80
矿业工程 (o)	36,745	12,250	33.34	ditto	11,050	90.20	30.07
冶金工程 (p)	78,118	25,200	32.26	ditto	24,020	95.32	30.75
其他专业 (q)	96,743	14,323	14.67	ditto	12,312	85.96	12.61

Key: (a) Specialty; (b) Statistical volume investigated in the nation (number of papers); (c) Beijing; (d) Manuscript generation units; (e) Distribution rate; (f) Number of manuscripts (papers); (g) Percentage of the whole nation; (h) Units; (i) Percentage of the local area; (j) Elementary natural science; (k) Chemistry and chemical engineering; (l) Mechanical engineering; (m) Electronics and electronic computers; (n) Geology; (o) Mine engineering; (p) Metallurgical engineering; (q) Other specialties.

END

FILMED

6-84

DTIC